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Civilian Industrial Reserve Forces (CIRF)

A National Surge Workforce for the Modern Era

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Background: The Proven Guard & Reserve Model

Since America's birth, the primary mechanism our nation has employed to rapidly respond to any threat has been through volunteers. Leading up to and during the Revolutionary War, these volunteers would form militias to protect the nation. Today, these militias are known as the National Guard and Reserves and are formally recognized components of the U.S. Armed Forces. They remain critical to protecting the US. In fact, the current FY2025 Authorized/End-Strength for these forces is 765,700, which is 60% of the size of Active Duty forces. In other words, even with a world-class active-duty force, we still depend greatly on these individual volunteers from across the country. Through this structure, DoD ensures it maintains a force with needed skills, readiness, and esprit de corps to stay sharp and prepared to respond at a moment's notice.

The DIB's Skilled Workforce Gap: No Equivalent Reserve Force for Skilled Industrial Labor

The same cannot be said about the nation's shrinking base of skilled labor and shortage of technical talent that underpins our Defense Industrial Base (DIB). There is no comparable model. Welders, machinists, sustainment technicians, precision fabricators, and shipyard trades have no "ready reserve." Yet these skilled trades that are central to shipbuilding, aerospace, and munitions production are retiring faster than they can be replaced, leaving yawning gaps in critical manufacturing capacity. The Department of Defense's 2024 National Defense Industrial Strategy (NDIS) explicitly warns that the defense market "lacks sufficiently skilled workers" to meet production and sustainment needs. A follow-on GAO assessment (March 2025) found that Navy shipbuilding alone will require roughly 174,000 new workers over the next decade to meet fleet requirements – an increase that assumes high attrition continues. Similarly, a Deloitte–Manufacturing Institute study (2024) projects 3.8 million new manufacturing roles by 2033, with nearly half likely to go unfilled due to shortages of qualified tradespeople. There are more studies than one can cite in a single document. Together, these findings point to a structural labor shortfall – measured in the hundreds of thousands today and millions within a decade – that threatens not just production schedules but the nation's ability to mobilize industrial capacity in crisis.

At the same time that we have these workforce shortages, our need to increase the number of those employed to support the DIB is accelerating. Without an intentional pipeline to recruit and train the next generation of skilled workers, even the most advanced weapons programs will be

slowed by bottlenecks on the factory floor. In contrast to the Guard and Reserve, there is no organized national system ensuring these industrial skills remain ready, available, and scalable when the country needs them most.

These issues are not just a skills gap. There is also a wage gap. While the shortage of skilled and technical labor is real, it is compounded by structural issues in how the workforce is retained. Qualified workers often exist, but many drift away when jobs are seasonal, wages are suppressed, or when no national plan exists to sustain their participation in critical trades. The result is a negative cycle where training investments are made while the workforce continues to leak into other industries. Any effective solution must address not only the pipeline of new talent; but also, the economic conditions that keep skilled people engaged and ready when national demand surges.

This must change. US policy makers take action to prepare for future demands of the Defense Industrial Base (DIB). We need a Civilian Industrial Reserve Force (CIRF).

Congressional First Steps: From CRMN to CIFR

In recent years, Congress has begun experimenting with reserve-style constructs for industry, most notably in the House Appropriations Committee's FY 2026 defense spending bill, which proposed the creation of a Civil Reserve Manufacturing Network (CRMN). While the CRMN concept recognizes the urgent need for scalable surge capacity, it is narrowly focused on dual-use factories equipped with advanced additive manufacturing systems. The approach mirrors the Civil Reserve Air Fleet model, but it risks oversimplifying the challenge. America's bottleneck is not limited to machine availability or factory tooling – it is rooted in human capital, training, and the geographic dispersion of small and medium manufacturers (SMMs).

The CRMN language is an encouraging signal that Congress acknowledges the need for a structural "reserve" model for production. Yet, as designed, it stops short of addressing the deeper systemic gaps. By centering capacity around high-tech pilot plants, it overlooks the vast but underutilized ecosystem of regional training centers, technical schools, and SMMs that could be mobilized if organized into a true reserve framework. The CIRF expands upon this initial step by proposing a nationwide, human-centered reserve system – ensuring not just that machines exist, but that skilled people are trained, mobilizable, and compensated to operate them when surge requirements emerge.

A Practical Solution: Leverage Local Industrial "Armories"

The potential for the CIRF concept holds tremendous promise because of existing elements already in place. To wit, the United States does not need to build the equivalent of new armories for this purpose. They already exist:

- Engineering schools and universities with advanced labs

- Career Technical Education (CTE) centers with CNC machines, weld training, and robotics
- Regional Skills Centers and technical high schools with shop floors ready for surge training

The Civilian Industrial Reserve Forces: How the CIRF Works

The CIRF will be akin to serving in the military, i.e., a volunteer force. In this construct, skilled workers join the Civilian Industrial Reserve Forces (CIRF). The source of volunteers can be broad. Such a volunteer might be an active machinist for a company untethered to the DIB or former skilled tradesmen who are not actively employed in a manufacturing role. Moreover, it can represent a path for many new additions; be it veterans, transitioning service members, new high school grads, or new career technical school graduates.

The approach would include:

- *Monthly Musters*: Akin to a Guardsman or Reservist, CIRF volunteers would meet at the assigned facility one weekend per month. This is a chance to educate CIRF volunteers on details or nuances associated with the military or military weapons platforms. It helps develop a sense of duty and service. It creates camaraderie. It acts as a de facto opportunity for anyone to have a defined continuing education pathway.

- *Annual Training*: Also like the Guard and Reserves, CIRF volunteers would commit to two weeks per year of annual training at designated training centers. This includes paid time, hands-on upskilling, and real production of piece parts or sub-assembly work. It can also include site visits to one of the 17 major active DoD maintenance depots, spread across the Army, Air Force, Navy, and Marine Corps. This direct interaction with DoD further develops a true personal commitment to serving for a cause.

- *Stipends*: Participants receive an annual readiness stipend (~$10,000) plus paid training time.[1] For the standard skilled laborer, this is not trivial.

- *Credential Currency*: Skills, certifications, and clearances stay current.

- *Activation*: In a surge scenario, CIRF members can be rapidly mobilized to fill capacity gaps in the Defense Industrial Base. This could be to backfill major defense suppliers; DoD depot facilities; or through the Civil Reserve Manufacturing Network (CRMN) concept that is in the House Appropriations Committee Report accompanying the FY 2026 Defense Appropriations legislation.

[1] Similar to the Guard & Reserve approach, Volunteers are paid for 4 duty periods for a 2-day monthly muster. We use a baseline of $25/hour for starting estimates and add in the 2-weeks Annual Training to come to the approximate $10,000 in annual compensation.

Cost Benchmark: A Fraction of Guard & Reserve Spend

Maintaining a 200,000–500,000 person CIRF would cost an estimated $3–4 billion per year. This is a fraction of the ~$40 billion spent to sustain the Guard & Reserve. And while the cost is less, the Return on Investment (ROI) would be higher. More importantly, the national security payoff would be profound: when crises hit, we surge workers – not just weapons.

Historical Precedent: WWII Arsenal of Democracy

This model echoes WWII's War Manpower Commission and Emergency Training Programs, which tapped high schools, trade schools, and universities to train welders, riveters, machinists, and engineers at scale – building the Arsenal of Democracy that overwhelmed Axis powers. Today's threat environment demands the same intentionality – modernized for a distributed, high-tech manufacturing base.

Policy, Forward Look, & Why it Matters

Executive Orders 14017 (America's Supply Chains) and 13944 (Defense Production Act Prioritization) already provide legal foundation to direct Title III DPA funding toward workforce sustainment. A new Executive Order could go further by explicitly authorizing a National Civilian Industrial Reserve Force and designating regional training centers as critical national security infrastructure. Funding mechanisms can combine Title III dollars, state workforce funds, and employer contributions – simple levers that already exist, if pointed at the problem with intent.

Looking ahead, the CIRF model carries significant implications abroad. Skilled labor outside the U.S. – for example, a machinist or engineer in Germany – could be integrated into defense production through targeted visa programs or structured partnerships with allied firms. More importantly, allied nations should establish their own reserve-style systems to safeguard sovereign industrial resilience. A network of interoperable reserves across the U.S. and its partners would multiply the effect, creating a coalition surge capacity far stronger than any one country could achieve.

The payoff is clear: "The Guard & Reserve keep soldiers ready to fight. The CIRF keeps America ready to build." Without a trained, mobilizable surge labor pool, advanced manufacturing investments are just idle machines. The CIRF closes this gap—turning underutilized human capital into a strategic advantage no peer competitor can match. And while this white paper outlines the concept at a high level, the architecture runs deeper: integrated execution models, funding flow frameworks, annual budget estimates, and legislative pathways have already been mapped. They are ready to advance as Congress and DoD take up the CIRF proposal.